

Claims

1. An apparatus for separating a suspension into a fine fraction and a coarse fraction of the suspension containing solid particles, comprising a filter rotor (2), which is rotatable about a horizontal axis, at least one filter disc (5), which is attached to the filter rotor and has a wall (6) of filtering material, supply means (8) for supplying the suspension to be separated to the filter disc, so that during rotation of the filter disc the fine fraction of the suspension passes through the wall of filtering material, while a mat of the coarse fraction of the suspension is deposited on the wall of filtering material, and a detachment device (13) for detaching the mat of coarse fraction from the wall of filtering material, the detachment device including at least one liquid jet nozzle (14) adapted to spray a liquid jet against the wall of filtering material, characterised in that the detachment device (13) also includes at least one air jet nozzle (15) adapted to spray an air jet against the wall (6) of filtering material, so that the air jet participates in the detachment of the mat of coarse fraction and reduces the liquid dilution of the detached mat of coarse fraction.
2. An apparatus according to claim 1, wherein the detachment device (13) is adapted to adjust the relationship between the liquid flow supplied by the liquid jet nozzle (14) and the air flow supplied by the air jet nozzle (15), in order to provide a desired particle concentration of the detached mat of coarse fraction.
3. An apparatus according to claim 1, wherein the detachment device (13) comprises a plurality of liquid jet nozzles (14) and a plurality of air jet nozzles (15).

4. An apparatus according to claim 3, wherein the detachment device (13) is adapted to adjust the relationship between the liquid flow supplied by the liquid jet nozzles (14) and the air flow supplied by the air jet nozzles (15), in order to provide a desired particle concentration of the detached mat of coarse fraction.

5. An apparatus according to claim 4, wherein the detachment device (13) is adapted to close an optional number of the liquid jet nozzles (14) and/or an optional number of the air jet nozzles (15), to adjust the relationship between the liquid flow sprayed by the liquid jet nozzles and the air flow sprayed by the air jet nozzles.

6. An apparatus according to claim 4, wherein the air jet nozzles (15) are disposed in a row extending radially from the rotor axis and the detachment device (13) is adapted to reduce the air flow sprayed by the air jet nozzles by closing an optional number of the air jet nozzles.

7. An apparatus according to claim 6, wherein the detachment device (13) is adapted to reduce the air flow by closing an optional number of the air jet nozzles (15) counted from the radially innermost air jet nozzle.

8. An apparatus according to claim 4, wherein the detachment device (13) is adapted to adjust the liquid flow sprayed by each liquid jet nozzle.

9. An apparatus according to any one of claims 1, 3-8, wherein each liquid jet nozzle (14) is adapted to spray liquid in an associated liquid zone and each air jet nozzle (15) is adapted to spray air in an associated air zone, the filtering material passing through the liquid and air zones when the filtering

material is above the rotor axis during rotation of the filter disc (5).

10. An apparatus according to claim 9, wherein the liquid and air jet nozzles (14,15) are adapted to direct the jets of liquid and air against the filter disc (5) such that a portion of the filtering material which is above the rotor axis during rotation of the filter disc and which passes through any one of the air zones also passes through one of the liquid zones.

11. An apparatus according to claim 9, wherein the liquid and air jet nozzles (14,15) are adapted to direct the jets of liquid and air against the filter disc (5) such that a portion of the filtering material that is above the rotor axis during rotation of the filter disc first passes through any one of the air zones and then passes through one of the liquid zones.

12. An apparatus according to claim 9, wherein the liquid and air jet nozzles (14,15) are adapted to direct the jets of liquid and air against the filter disc such that a portion of the filtering material that is above the rotor axis during rotation of the filter disc (5) first passes through any one of the liquid zones and then passes through one of the air zones.